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16 **UNITED STATES DISTRICT COURT**
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

17 SENSOR ELECTRONIC) Case No.: 5:18-cv-05194-LHK
18 TECHNOLOGY, INC., a New York)
Corporation)
19 Plaintiff,)
vs.)
20)
BOLB, INC., a Delaware Corporation,)
21 QUANTUM EGG, INC., a Delaware)
Corporation)
22)
Defendants.)
23)
24)

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1 Pursuant to Northern District of California Patent Local Rule 4-5 and this Court's Scheduling
 2 Order (Dkt. 35), Plaintiff Sensor Electronic Technology, Inc. ("SETi" or "Plaintiff") hereby files its
 3 opening claim construction brief.

4 **I. RELEVANT LEGAL STANDARDS**

5 **1. The Purpose of Claim Construction**

6 Throughout the claim construction process, the focus should be on the ultimate use of the
 7 adopted construction – to instruct the jury on the scope and meaning of the asserted claims. *Eon*
 8 *Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1320 (Fed. Cir. 2016) (explaining
 9 that the adopted constructions should "provide the jury with a clear understanding of the disputed
 10 claim scope"). That the adopted constructions are used to instruct the jury confirms that the claim-
 11 construction process is not an academic exercise. Thus, trial judges are not obligated to "repeat or
 12 restate every claim term." *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir.
 13 1997). Instead, the focus should initially be on identifying whether the parties have presented "a
 14 fundamental dispute regarding the scope of a claim term." *O2 Micro Int'l Ltd. v. Beyond*
 15 *Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (emphasis added). Only the existence
 16 of such a "fundamental dispute" creates a "duty [for the court] to resolve it." *Id.*; *see also id.*
 17 (holding that trial judges are "not obligated to construe terms with ordinary meanings, lest trial
 18 courts be inundated with requests to parse the meaning of every word in the asserted claims").

19 Moreover, as the Federal Circuit acknowledged in *Phillips v. AWH Corp*, 415 F.3d 1303
 20 (Fed. Cir. 2005) (*en banc*) "[i]n some cases, the ordinary meaning of claim language as understood
 21 by a person of skill in the art may be readily apparent . . . to lay judges, and claim construction in
 22 such cases involves little more than the application of the widely accepted meaning of commonly
 23 understood words." *Id.* at 1314. In those cases, "general purpose dictionaries may be helpful." *Id.*

2. The Hierarchy of Claim-Construction Evidence

Two different forms of evidence are considered in the claim-construction process: intrinsic evidence, which consists of the claims, specification, and prosecution history of the asserted patents; and extrinsic evidence, which comprises materials that are not part of the asserted patent's public record. *Phillips*, 415 F.3d at 1314-17. As the Federal Circuit has confirmed, the intrinsic record is given primacy in the analysis. *Id.* at 1317. In general, the first step in the analysis is to consider the language of the patents' claims (both asserted and unasserted). *Id.* at 1314. Next, the analysis focuses on the specification of the relevant patent. *Id.* at 1315-17. And the final component of the intrinsic record is the prosecution history. *Id.* at 1317. In addition, district courts are "authorized . . . to rely on extrinsic evidence, which 'consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.'" *Id.* 1317-18.

3. Application of the Proffered Evidence

As discussed in the preceding section, the scope of evidence potentially touching on claim construction is open ended. That open-ended scope, however, is not an invitation to rely on extrinsic evidence to adopt “definitions considered in the abstract.” *Mangosoft, Inc. v. Oracle Corp.*, 525 F.3d 1327, 1330 (Fed. Cir. 2008). To the contrary, the goal is to give the disputed terms their “ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of invention.” *Phillips*, 415 F.3d at 1312-13 (emphasis added). In doing so, the claim language and specification are the primary focus. *Id.* at 1316. Care must be taken, however, not to import limitations from the specification into the claims, which is a “cardinal sin” of patent law. *Id.* at 1319-20; *see also id.* at 1312 (“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’”). To avoid improperly constraining the scope of the claims as written, the Federal Circuit has diverged from

1 the plain and ordinary meaning only “1) when a patentee sets out a definition and acts as his own
 2 lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the
 3 specification or during prosecution.” *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365
 4 (Fed. Cir. 2014) (citations and quotations omitted); *Thorner v. Sony Computer Entm’t Am. LLC*,
 5 669 F.3d 1362, 1365 (Fed. Cir. 2012).

6 **4. Issues of Law and Fact During Claim Construction**

7 As held in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996), the ultimate
 8 resolution of a claim construction dispute is an issue of law. In some cases, however, that ultimate
 9 legal issue may be predicated on disputed issues of fact. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*,
 10 135 S. Ct. 831, 837 (U.S. 2015). Such factual disputes may arise when a district court receives
 11 expert opinion on the ordinary and customary meaning. *Id.* at 835.

12 **5. Indefiniteness under *Nautilus***

13 In *Nautilus, Inc. v. Biosig Instruments, Inc.*, the Supreme Court held that a patent is invalid
 14 for indefiniteness, under 35 U.S.C. § 112, “if its claims, read in light of the specification
 15 delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those
 16 skilled in the art about the scope of the invention.” 572 U.S. 898, 901 (2014). This standard
 17 “mandates clarity, while recognizing that absolute precision is unattainable.” *Id.* at 910.
 18 Indefiniteness is a question of law addressed to the Court. *See Presidio Components, Inc. v. Am.*
 19 *Tech. Ceramics Corp.*, 875 F.3d 1369, 1375 (Fed. Cir. 2017). Courts have discretion to address
 20 indefiniteness during claim construction or at the summary judgment stage. *See Am. GNC Corp. v.*
 21 *LG Elecs., Inc.*, No. 17-CV-01090, 2018 WL 400346, at *10 (S.D. Cal. Jan. 12, 2018).

22 **II. DISPUTED CONSTRUCTIONS**

23 The parties have designated ten “most significant” terms as required by N.D. Cal. Patent
 24 Rule 4-3(c). Consistent with the Court’s practice, only those ten terms are addressed in the

1 sections below. *Twilio, Inc. v. Telesign Corp.*, No. 16-CV-06925, 2017 WL 4573371, at *3 (N.D.
 2 Cal. Oct. 13, 2017). At the beginning of each section, SETi attempts to identify the dispute(s)
 3 between the parties' proposals.

4 **1. “cover” ('965 patent, claim 1)**

5 Claim Term	6 Plaintiff's Proposal	7 Defendants' Proposal
“cover”	Plain and ordinary meaning.	“a lid or cap that seals the case when closed or attached”

8 This very first term indicates the stark difference in the parties' approach to claim
 9 construction. SETi asserts that the term “cover” is a common English-language word that requires
 10 no narrowing or gloss to be utilized by the Court or a jury. In contrast, Defendants replace that
 11 single word with two similar terms (lid or cap) and functional language.

12 Following the Federal Circuit's guidance in *Phillips*, 415 F.3d at 1314, the claim-
 13 construction analysis begins with the language of the claims themselves. Here, claim 1 recites “a
 14 cover configured to selectively close and open the case.”¹ Thus, claim 1 recites both the structure
 15 and how that structure is configured – “to selectively close and open the case.” The claim language
 16 in context gives sufficient guidance as to the structure required.

17 The next step in the analysis considers the specification. *Phillips*, 415 F.3d at 1315-16. As
 18 the Federal Circuit has emphasized in recent years, although the claims are interpreted “in view of
 19 the specification,” the claims are not limited based on the specification absent a definition or
 20 disclaimer. *Cont'l Circuits LLC v. Intel Corp.*, 915 F.3d 788, 796 (Fed. Cir. 2019) (citing cases).
 21 Thus, district courts have been cautioned regarding the “fine line between construing the claims in
 22 light of the specification and improperly importing a limitation from the specification into the
 23 claims.” *Id.* Here, the specification provides a broad and varied disclosure for the “cover,” for

24
¹ All emphases herein is added unless otherwise described.

1 which a “cap” is described as merely an example. (Eisenberg Decl. Ex. 1 (’965 patent) at 2:7-8
 2 (using a parenthetical to explain that a “cap” is an example of a “cover”); 3:52-53 (explaining that
 3 “[i]n an embodiment, an ultraviolet impermeable cover (also referred to as a cap) . . .”)).

4 Indeed, Defendants’ substitution of the simple term “cover” with “lid or cap” renders the
 5 scope of the claim, if anything, less clear. In particular, if those alternatives are mere synonyms of
 6 identical scope to the claim as drafted, then the substitution is unnecessary. *Aircraft Tech.*
 7 *Publishers v. Avantext, Inc.*, No. C 07-4154 SBA, 2009 WL 3817944, at *9 (N.D. Cal. Nov. 10,
 8 2009) (refusing to swap the claim term “generating” with a synonym). If, however, Defendants’
 9 proposal is intended to curtail claim scope, no support is provided in either the specification or
 10 prosecution history of the ’965 patent. To the contrary, as discussed above, the specification
 11 identifies a “cap” as an example of a “cover.” And the term lid is absent from the intrinsic record.

12 Similarly, Defendants’ attempt to graft a function requirement – “that seals the case when
 13 closed or attached” – should be rejected. As an initial matter, the claim itself sufficiently identifies
 14 the capabilities of the “cover” – to “selectively open and close the case.” More importantly, the
 15 word “seal” was never used by the applicant in either specification or prosecution history of the
 16 ’965 patent to describe the function of the cover. In short, there can be no evidence to meet the
 17 high standards for lexicography or disavowal (*see Poly-Am., L.P. v. API Indus., Inc.*, 839 F.3d
 18 1131, 1136 (Fed. Cir. 2016)), based on the term “seal,” which is absent from the relevant sources.

19 **2. “second compartment defines the volume” (’965 patent, claim 2)**

20 Claim Term	21 Plaintiff’s Proposal	22 Defendants’ Proposal
22 “second compartment 23 defines the volume”	23 Plain and ordinary meaning, 24 or in the alternative, “the 24 volume includes the second 24 compartment”	24 Indefinite 24 <u>In the alternative:</u> 24 “only the second compartment is exposed 24 to ultraviolet radiation from the at least 24 one ultraviolet radiation source”

For the second term – “second compartment defines the volume” – the parties’ primary dispute is whether its scope can be determined with reasonable certainty. Secondarily, the parties dispute whether the alleged function of the “second compartment” limits the claim’s scope.

Again, the proper starting point is the language of the relevant claims. Here, four passages from claims 1 and 2 provide the proper context for construction:

an ultraviolet radiation containing case configured to enclose a volume corresponding to a flowable liquid product[;]

a first compartment configured to store a first portion of the flowable liquid product;

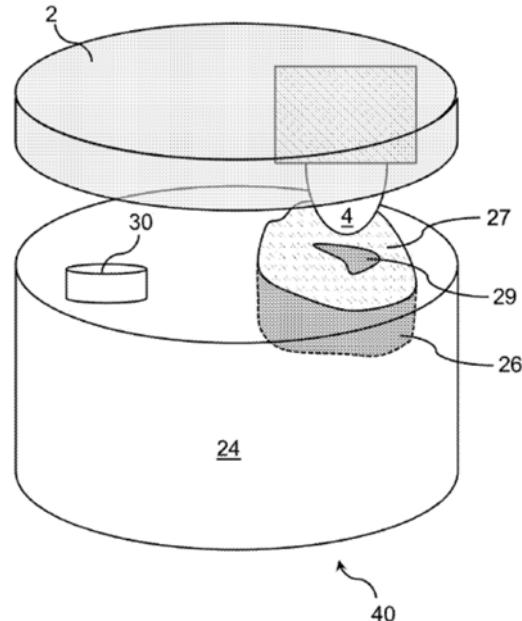
a second compartment configured to store a second portion of the flowable liquid product, wherein the second compartment includes a cover at least partially formed by an ultraviolet transparent material, and wherein the second compartment defines the volume such that the at least one ultraviolet radiation source is configured to generate ultraviolet radiation for disinfecting the second portion of the flowable liquid product through the ultraviolet transparent material,

wherein the first compartment and the second compartment are both located within an interior region of the case.

Focusing on the structural recitations, claim 2 requires a case enclosing a volume, with two compartments located within the volume. The disputed language (bolded above in context), explains that the second compartment comprises a portion of the volume that is configured to receive disinfecting ultraviolet radiation. To this point, except for the use of the word “only,” Defendants’ alternative construction is consistent with the recitation in context. The relevant dispute, therefore, is whether claim 2 requires the radiation to be exclusive to the second compartment. It does not.

While the language of claim 2 specifically links the second compartment to the radiation, nothing in the claim language itself excludes radiation from the remainder of the volume. Indeed, claim 7, which depends from claim 2 and uses the transitional phrase “comprising”, specifies that the first portion of the product (*i.e.*, the portion within the first compartment) can be disinfected by

1 radiation. Claims 2 (when viewed in the context of claim 7), therefore, provides a positive
2 requirement that applies to at least the second compartment. *Vehicular Techs. Corp. v. Titan Wheel*
3 *Int'l, Inc.*, 212 F.3d 1377, 1383 (Fed. Cir. 2000) (“A drafter uses the term ‘comprising’ to mean ‘I
4 claim at least what follows and potentially more.’”). Instead, Defendants seek to import a counter-
5 textual negative limitation into the claims, which should be rejected. *Omega Eng’g, Inc. v. Raytek*
6 *Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) (holding that a disclaimer or lexicography are
7 required to import a “negative limitation” into the claims).



3. “embedded partially relaxed sublayer” ('496 patent, claims 1, 4, 7, 12)

Claim Term	Plaintiff's Proposal	Defendants' Proposal
[wherein at least one of the contact semiconductor layers includes an “embedded partially relaxed sublayer”]	“The p-type contact semiconductor layer and/or the n-type contact semiconductor layer incorporates within that layer a semiconductor sublayer that includes dislocations that reduce stress”	“a sublayer that includes dislocations that reduce stress and is surrounded by the layer it is incorporated into”

The parties agree that an “embedded partially relaxed sublayer” is a sublayer that includes

1 dislocations to reduce stress. The remainder of their constructions, however, differ. SETi's
 2 construction seeks to provide context for the jury by explaining where the recited sublayer is
 3 embedded based on the express claim language. Defendants, in contrast, seek to import a narrow
 4 meaning of embedded – that it is “surrounded” by the layer it is incorporated into.

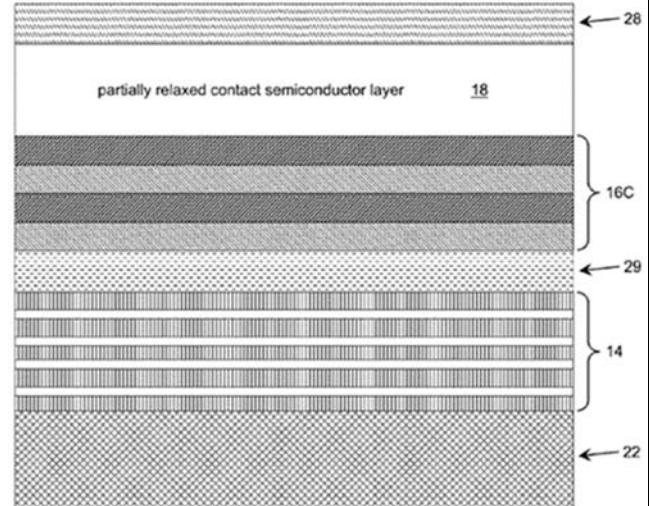
5 SETi asserts that referring to the p-type/n-type semiconductor contact layers provides
 6 helpful context for the jury from the claim language itself:

7 an n-type contact semiconductor layer located on the first side of the light generating
 8 structure;
 9 a p-type contact semiconductor layer located on the second side of the light
 generating structure, wherein at least one of the contact semiconductor layers
includes an embedded partially relaxed sublayer.

10 More specifically, the necessary relationship between the p-type/n-type semiconductor layers and
 11 the “embedded partially relaxed sublayer” is expressly addressed, *i.e.*, the latter “includes” the
 12 former. SETi's construction explains that requirement using the description “incorporates within.”

13 SETi's construction is also consistent with the exemplary descriptions in the '496 patent.

14 For example, the embodiment depicted in figure
 15 7 (reproduced to the right) shows a partially
 16 relaxed contact semiconductor layer (18) and a
 17 p-type contact semiconductor layer (28). The
 18 corresponding portion of the specification
 19 explains that the “partially relaxed p-type
 20 contact semiconductor layer 18 . . . [is] shown



21 embedded in the p-type contact semiconductor layer 28.” (Eisenberg Decl. Ex. 2 at 7:60-63.) A
 22 similar description is provided of a “partially relaxed n-type contact semiconductor layer 22B
 23 embedded within the n-type semiconductor layer 22A [in figure 14].” (*Id.* at 11:45-51.)

24 The portion of Defendants' construction interpreting the word “embedded” to mean

1 “surrounded by the layer it is incorporated into” should be rejected as inconsistent with the
 2 intrinsic record. More specifically, nothing in the claims, specification, or prosecution history
 3 indicate that an “embedded” layer must be “surrounded.” Indeed, that word “surrounded” is never
 4 used within the intrinsic record to describe the invention. Instead, the portion of the prosecution
 5 history cited by Defendants (Dkt. 55-1 at 15 (citing Amend. of May 18, 2017 at 12-14)), states that
 6 the prior art’s disclosure of “a separate relaxation enhancement layer” was insufficient. (Eisenberg
 7 Decl. Ex. 3 (’496 File History- Amend. of May 18, 2017) at 13.) Distinguishing the prior art as
 8 disclosing a “separate” layer is insufficient to act as a “clear and unmistakable” disclaimer of
 9 every form of embedding other than being “surrounded.” *See Mass. Inst. of Tech. v. Shire Pharm., Inc.*, 839 F.3d 1111, 1119 (Fed. Cir. 2016). Moreover, as the Federal Circuit has cautioned
 10 “because the prosecution history represents an ongoing negotiation between the PTO and the
 11 applicant, rather than the final product of that negotiation, it often lacks the clarity of the
 12 specification and thus is less useful for claim construction purposes.” *Phillips*, 415 F.3d at 1317.
 13 That caution has direct application here, as Defendants’ proposal would exclude preferred
 14 embodiments, which “is rarely, if ever, correct and would require highly persuasive evidentiary
 15 support.” *Vitronics Corp. v.. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (citing
 16 cases).

18 Finally, both parties rely on extrinsic evidence. (Dkt. 55-1 at 15.) Such evidence “can shed
 19 useful light on the relevant art,” but is “less significant than the intrinsic record.” *Phillips*, 415
 20 F.3d at 1317. Importantly, extrinsic evidence should not be used to “change the meaning of claims
 21 in derogation of the ‘indisputable public records consisting of the claims, the specification and the
 22 prosecution history.’” *Id.* (citations omitted). Here, rather than being a helpful explanation of the
 23 term embedded as used in the ’496 patent, Defendants’ citations seek to improperly alter that
 24 term’s meaning, and therefore, should be rejected.

1 4. “dislocation blocking structure” (’496 patent, claims 1, 7, 12)

2 Claim Term	3 Plaintiff’s Proposal	4 Defendants’ Proposal
5 “dislocation 6 blocking 7 structure”	8 Should this element not be found to be a 9 means-plus-function limitation (as asserted by 10 Plaintiff): “an epitaxially grown semiconductor 11 layer having substantially fewer dislocations at 12 a first side than at a second side” 13 or 14 Should this element found to be a means-plus- 15 function limitation (as asserted by Defendant): 16 the only possible functional language is 17 “dislocation blocking,” which requires no 18 construction. Corresponding structures are 19 disclosed at 8:1-4; 8:4-8; 8:9-19; 8:20-23; 20 8:37-41; 9:4-20; 9:21-40; 9:55-60; 10:2-11; 21 10:20-11:3; 11:4-21; 11:51- 61; Figs. 7-11, and 22 14 and includes equivalents thereof.	23 This term is governed by 35 24 U.S.C. § 112(6). Function: blocking dislocations Structure: a layer including alternating compressive and tensile sublayers, as disclosed in the specification at 8:1-9, 8:20- 23, 8:37-41, 9:4-40, 9:55- 60, 10:2-11, 10:20-11:3, and 11:51-61 and Figs. 7, 8, 9A, 9B, 10A, 10B, 11A, 11B, and 14.

12 The primary dispute between the parties is whether the term “dislocation blocking
13 structure” is a means-plus-function term under 35 U.S.C. § 112, ¶ 6. To the extent that the
14 recitation is so limited, a second dispute is whether the claims are limited to a single corresponding
15 structure as asserted by Defendants.

16 Congress enacted § 112, ¶ 6 in reaction to *Halliburton Co. v. Walker*, 329 U.S. 1 (1946),
17 which invalidated a claim that “describe[d] th[e] most crucial element in the ‘new’ combination in
18 terms of what it will do rather than in terms of its own physical characteristics or its arrangement
19 in the new combination apparatus.” *Id.* at 9; *see also Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*,
20 841 F.3d 1288, 1295 (Fed. Cir. 2016). The *quid pro quo* for permitting the use of that claim form
21 was limiting the claims to the corresponding structures in the specification and equivalents thereof.
22 *Chicago Bd. Options Exch., Inc. v. Int'l Sec. Exch., LLC*, 677 F.3d 1361, 1367 (Fed. Cir. 2012).

23 As a procedural matter, the analysis begins with a rebuttable presumption that § 112, ¶ 6
24 does not apply where, as here, the word “means” was not used. *TEK Glob., S.R.L. v. Sealant Sys.*

1 *Int'l, Inc.*, 920 F.3d 777, 785 (Fed. Cir. 2019) (citation omitted). Rebuttal requires a showing that
 2 the “claim term fails to ‘recite sufficiently definite structure.’” *Id.* That analysis is conducted based
 3 on the intrinsic record and, if necessary, extrinsic evidence. *Id.*

4 Starting with the claim language, that the recitation is structural is supported by the
 5 recitation in context – “a dislocation blocking structure . . ., wherein the dislocation blocking
 6 structure includes a graded composition that changes from a first side of the dislocation blocking
 7 structure to a second side thereof.” Thus, rather than using a generic placeholder, claim 1 recites
 8 specific details of the recited structure.

9 The specification also supports treating this recitation as structural rather than functional.
 10 In particular, when describing the “dislocation blocking structure,” the specification separately
 11 discussed the type of structure (*e.g.*, a “p-type dislocation blocking structure”) and the function
 12 thereof (“prevent dislocations present in the partially relaxed contact semiconductor layer 18 from
 13 propagating into the light generating structure 14”):

14 FIG. 5 shows a schematic of an illustrative light emitting heterostructure 12A
 15 according to an embodiment. The light emitting heterostructure 12A includes a light
 16 generating structure 14, an adjacent p-type dislocation blocking structure 16A, and a
 17 partially relaxed p-type contact semiconductor layer 18 In the light emitting
 heterostructure 12A, the dislocation blocking structure 16A can be configured to
prevent dislocations present in the partially relaxed contact semiconductor layer 18
from propagating into the light generating structure 14.

18 (Eisenberg Decl. Ex. 2 at 6:45-60.)

19 In addition, the prosecution history shows that the Examiner treated this recitation as
 20 structural rather than as purely functional under § 112, ¶ 6. In particular, when applying the Kang
 21 reference, the Examiner did not assess whether that reference disclosed the same or equivalent
 22 structure to that disclosed in the application, but instead simply noted the disclosure of “a
 23 dislocation blocking structure 130.” (Eisenberg Ex. 4 (Office Action of March 1, 2017) at 8); *see*
 24 *also* M.P.E.P. 2181 (explaining how an examiner is to determine whether § 112, ¶ 6 is invoked);

1 M.P.E.P. 2182 (explaining that when § 112, ¶ 6 is invoked, examination requires an analysis of the
 2 corresponding disclosed structure). Instead, the Examiner's analysis was limited to identifying the
 3 use of the phrase "dislocation blocking structure" in the abstract Kang to identify layer 130.
 4 (Eisenberg Ex. 4 at 7.)

5 Extrinsic evidence also supports treating this recitation as structural. For example, U.S.
 6 Application 2008/0054294 (Lai) uses the term to identify a specific type of semiconductor
 7 structure. Consistent with that description, Professor DenBaars explains in his declaration that the
 8 claim recitation would have been understood by a person having ordinary skill in the art to refer to
 9 a known class of semiconductor structures. (DenBaars Decl. ¶ 13-18.)

10 To the extent that Defendants are correct that § 112, ¶ 6 applies, the proposed construction
 11 should still be rejected as identifying an overly narrow identification of corresponding structure. In
 12 particular, Defendants assert that the corresponding structure must include "alternating
 13 compressive and tensile sublayers." (Dkt. 55-1 at 15.) Rather than being limited to only such
 14 alternating layers, the specification of the '496 patent discloses alternate structures, including sets
 15 of layers having "tensile and compressive stresses [that] can be substantially constant" (Eisenberg
 16 Ex. 2 at 9:36-40); incorporating "patterning" (*id.* at 10:20-34); or using "partially relaxed
 17 sublayers" (*id.* at 11:4-21).

18 **5. "graded composition" ('496 patent claims 1, 7, and 12)**

19 Claim Term	20 Plaintiff's Proposal	21 Defendants' Proposal
22 "graded 23 composition"	24 "The composition of the dislocation blocking structure changes across its thickness"	25 "composition that gradually and monotonically changes from one side to the opposite side"

26 Consistent with many of the parties' disagreements, the dispute here is whether the term
 27 should be construed in the context of the claims, specification, and prosecution history as SETi
 28 asserts, or by importing two additional limitations (*i.e.*, "gradually" and "monotonically"), as

1 Defendants propose.

2 Here again, the starting point is the claim language itself, which provides clear guidance on
 3 the scope and meaning of the disputed term. In particular, the disputed recitation is not merely
 4 “graded composition,” but instead “a graded composition that changes from a first side of the
 5 dislocation blocking structure to a second side thereof.” Thus, the express claim language defines
 6 the nature of the change based on the dislocation blocking layer’s first and second sides. That view
 7 is further supported by the dependent claims (e.g., dependent claim 2) which explains that a
 8 “dislocation blocking structure” having a “graded composition” includes “a plurality of tensile
 9 sublayers alternating with a plurality of compressive sublayers.”

10 Similarly, the specification uses the term “graded” to broadly describe variations in
 11 composition between the first and second sides of a layer. (Eisenberg Ex. 2 at 11:67-12: (“the
 12 graded layer 60 can comprise a composition that varies from a composition of an adjacent layer,
 13 such as the dislocation blocking structure 16D, located on one side, to a composition of the light
 14 generating structure 14 located on the opposing side.”).) That the change is not limited to a
 15 specific form of variation is confirmed throughout the specification. (*Id.* at Figs. 9A (reproduced to
 16 the right); 9B; 9:21-40; *see also id.* at 12:4-10 (“The
 17 composition grading can be linear or parabolic, with a
 18 grading gradient selected to minimize stresses and/or
 19 maximize polarization doping.”); *id.* at 12:22-29 (“In
 20 general, the V/III ratio can be utilized to lower a gradient of
 21 the lattice constant at a heterojunction or a graded junction as compared to a gradient lattice
 22 constant that would otherwise be obtained without utilizing variations in the V/III ratio during the
 23 epitaxial growth.”).)

24 Defendants’ proposed requirement that the change occur “gradually and monotonically” is

116A

Tensile Layer	136C
Compressive Layer	134C
Tensile Layer	136B
Compressive Layer	134B
Tensile Layer	136A
Compressive Layer	134A

1 inconsistent with the claim language and specification of the '496 patent. As to the word
 2 "gradually," the specification never uses that term to provide a lexicographic definition of the term
 3 "graded composition." Instead, the only uses of the word "gradually" in the specification refer to
 4 the change in stress rather than composition. (Eisenberg Decl. Ex. 2 at 9:34-40 ("Alternatively, the
 5 stress can gradually change between adjacent layers (e.g., by growing layers having a graded
 6 tensile or compressive stress). Furthermore, the tensile and compressive stresses can be
 7 substantially constant between periods of the dislocation blocking structures 116A, 116B or can
 8 gradually change from period to period.").)

9 In contrast, the word "monotonically" is entirely absent from the intrinsic record, rendering
 10 the imposition of that requirement unsupportable. As discussed above, the specification broadly
 11 describes the type of changes that fall within the scope of the term "graded composition,"
 12 rendering improper Defendants' attempt to impose limitations. *Thorner*, 669 F.3d at 1365.

13 **6. "the difference in the molar fractions is selected based on a thickness of at least
 14 one of the first layer or the second layer" ('468 patent claim 14)**

15 Claim Term	16 Plaintiff's Proposal	17 Defendants' Proposal
18 "the difference in the molar fractions 19 is selected based on a thickness of at 20 least one of the first layer or the 21 second layer"	Plain and ordinary meaning.	Indefinite (both 22 apparatus and step of 23 making apparatus)

24 Rather than the scope and meaning of this claim term, the primary dispute between the
 25 parties is whether it is improper to recite an apparatus claim in terms of process steps. Defendants'
 26 position should be rejected as contrary to law.

27 Under Federal Circuit law, a claim may be held invalid if it is directed to "hybrid subject
 28 matter." *HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1274 (Fed. Cir. 2012). That
 29 doctrine, however, is a narrow one that applies only when the claim as properly construed fails to
 30 provide notice as to the requirements to establish or avoid infringement. *Id.* at 1277 (explaining

1 *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005)). In particular, when
 2 an apparatus is recited both in terms of its structure and based on its method of use, the resulting
 3 claim scope is ambiguous as to whether the structure itself infringes or instead infringement
 4 requires the product to be used in a specific way. That doctrine, however, has no application here.

5 Rather than an improper hybrid claim, claim 14 properly recites the apparatus in “product-
 6 by-process” form. *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1293 (Fed. Cir. 2009) (*en banc*)
 7 (“this court clarifies that the inventor is absolutely free to use process steps to define this
 8 product”). A product-by-process recitation describes a structure in terms of a method of making.
 9 *ArcelorMittal Atlantique et Lorraine v. AK Steel Corp.*, 908 F.3d 1267, 1276 (Fed. Cir. 2018).
 10 Infringement turns on whether the resulting product was made by that process (*id.*), and therefore,
 11 no ambiguity exists regarding the necessary predicates to infringement.

12 Applying the relevant law here, the determinative issue is whether the disputed term recites
 13 a method of using a completed product (*i.e.*, an improper hybrid claim) or instead recites a process
 14 for making a product (*i.e.*, a product-by-process claim). Based on Defendants’ own view of claim
 15 14, the claim recites a method of making, and therefore, does not fall within the category of
 16 improper hybrid claiming.

17 **7. “the material” (’468 patent claim 26)**

18 Claim Term	19 Plaintiff’s Proposal	20 Defendants’ Proposal
21 “the material”	Refers back to the recitations: “a first layer composed of a material” and “a second layer composed of a material” for antecedent basis, <i>i.e.</i> , the first layer and second layer are both aluminum gallium nitride.	Indefinite

22 Much like the preceding term, the primary dispute here is indefiniteness. Rather than
 23 absolute certainty, the controlling standard for indefiniteness is whether the “claims, read in light
 24 of the specification . . . , and the prosecution history, fail to inform, with reasonable certainty, those

1 skilled in the art about the scope of the invention.” *Nautilus*, 572 U.S. at 901. The issue, therefore,
 2 is whether those sources sufficiently clarify the identity of “the material” of dependent claim 26.

3 Here, the relevant claims provide substantial guidance. In particular, independent claim 11
 4 (from which claim 26 depends) recites in relevant part:

5 a dislocation bending structure . . . comprises a means for causing at least some
 6 dislocations propagating from the substrate to at least one of bend or annihilate,
 7 prior to reaching the active region, and wherein the means for causing includes a
 8 plurality of non-overlapping periods, wherein each period includes:
 9 a first layer composed of a material including an element; and
 10 a second layer composed of a material including the element.

11 Thus, claim 11 twice introduced the claim term “material” using the indefinite article “a” to
 12 introduce the layers within the dislocation bending structure. *See Baldwin Graphic Sys., Inc. v.*
Siebert, Inc., 512 F.3d 1338, 1343 (Fed. Cir. 2008) (explaining the use of definite and indefinite
 13 articles for purposes of providing antecedent basis).

14 The alleged lack of clarity apparently relied upon by Defendants is dependent claim 26’s
 15 use of the definite article “the” to introduce the further limitation “wherein the material is
 16 aluminum gallium nitride and wherein the element is aluminum.” In other words, by using the
 17 definite article “the,” Defendants assert that it is unclear which of the two recitations “a material”
 18 claim 26 refers to for antecedent basis. An alleged lacks of antecedent basis, however, can be
 19 resolved based on the intrinsic record. *See In re Downing*, 754 F. App’x 988, 996 (Fed. Cir. 2018).
 20 Based on the claim language itself, the most natural reading of claims 11 and 26 together is that
 21 the first and second layers are both comprised of aluminum gallium nitride, *i.e.*, they comprise
 22 “the material . . . aluminum gallium nitride.”

23 Support for this conclusion is provided throughout the ’468 patent. Indeed, any purported
 24 lack of clarity is immediately resolved by the Abstract, which explains that “[t]he dislocation
 bending structure can include a plurality of layers with adjacent layers being composed of a

1 material, but with molar fractions of an element in the respective material differing between the
 2 two layers.” (Eisenberg Ex. 5 at Abstract.) In particular, the indefinite article “a” introduces “a
 3 material” of multiple adjacent layers. *Id.*; *see also id.* at 4:27-28 (“adjacent layers in the dislocation
 4 bending structure 26 can be composed of different compositions of a [i.e., the same] material”); *id.*
 5 at 7:5-7 (“In an embodiment, the layers of dislocation bending structure 26 comprise Al_xGa_{1-x}N,
 6 with different molar fractions of Al, X, for adjacent layers.”).

7 **8. “each period including two layers formed of group III nitride materials . . .
 8 having molar fractions x [y] and x’ [y’], where x>x’ [y>y’]” (’133 patent claim 19)**

9 Claim Term	10 Plaintiff’s Proposal	11 Defendants’ Proposal
12 “each period including 13 two layers formed of group III nitride materials . . . having molar fractions x [y] and x’ [y’], where x>x’ [y>y’]”	14 “The first [second] superlattice includes a 15 repeating pattern of pairs of layers, each layer includes nitrogen, aluminum and another group III element, and the repeating pattern includes repeating the same higher/lower aluminum molar fraction in each pair”	16 Indefinite

17 For terms 6 and 7 above, SETi undertook to determine the specific indefiniteness issue
 18 raised by Defendants. Here, however, the precise nature of Defendants’ position remains unclear.
 19 The following analysis, therefore, focuses on SETi’s proposal.

20 Here again, the starting point for claim construction is the relevant claim language:
 21 a first superlattice structure located on the buffer layer, wherein the first superlattice
 22 structure is formed of a plurality of periods, each period including two layers
 23 formed of group III nitride materials including aluminum and having molar
 24 fractions x and x’, where x>x’;
 25 a second superlattice structure located on the first superlattice structure, wherein the
 26 second superlattice structure is formed of a plurality of periods, each period
 27 including two layers formed of group III nitride materials including aluminum and
 28 having molar fractions y and y’, where y>y’[.]

29 Thus, the claim itself refers to multiple pairs of layers as comprising “a plurality of periods.” The
 30 layers within each period are described as having differing molar fractions of aluminum, but the

1 same repeating molar fractions of aluminum between periods.

2 The concept of a molar fraction is further clarified by the following passage from the
3 specification of the '133 patent:

4 Group III nitride materials comprise one or more group III elements (e.g., boron
5 (B), aluminum (Al), gallium (Ga), and indium (In)) and nitrogen (N), such that
B_WAl_XGa_YIn_ZN, where 0≤W, X, Y, Z≤1, and W+X+Y+Z=1. The molar fractions
6 given by W, X, Y, and Z can vary between the various layers of the
heterostructure 10.

7 (Eisenberg Decl. Ex. 6 at 6:21-24.) In particular, the relevant materials include nitrogen (N) and
8 one or more elements from Group III of the periodic table (“boron (B), aluminum (Al), gallium
9 (Ga), and indium (In)”). Together, the number of atoms of all four Group III elements is equal to
10 the number of atoms of nitrogen (N), which is referred to as equal to 1. The subscripts W, X, Y,
11 and Z, therefore, refer to the fraction of atoms within a layer that are boron, aluminum, gallium, or
12 indium relative to the total number of Group III atoms.

13 Thus, the formula B_WAl_XGa_YIn_ZN characterizes the members of the Group III Nitrides.
14 Applying this description to the above reproduced claim language, for the layers of “first
15 superlattice structure,” the general subscript X is replaced by the specific values x and x' to
16 indicate that the repeating layers have higher and lower aluminum content relative to total Group
17 III content. And for the “second superlattice structure,” the general superscript X is replaced by the
18 specific values y and y' to again indicate that the repeating layers have higher and lower aluminum
19 content relative to total Group III content. Exemplary descriptions corresponding to this
20 interpretation are provided in the '133 patent. (Eisenberg Decl. Ex. 6 at 7:11-19 (describing a “first
21 superlattice structure” as repeating pairs of layers based on the formulas Al_xGa_{1-x}N and Al_xGa_{1-x}N);
22 7:38-44 (describing a “second superlattice structure” as repeating pairs of layers based on the
23 formulas Al_yGa_{1-y}N and Al_yGa_{1-y}N).
24

1 9. “short period superlattice” ('420 patent claims 1, 2, 4, 13, 14)

2 Claim Term	3 Plaintiff's Proposal	4 Defendants' Proposal
5 “short period superlattice”	6 “A semiconductor layer with a plurality 7 of barrier sublayers alternating with a 8 plurality well sublayers, where the 9 barriers are thin enough to provide 10 carrier movement through the layer.”	11 “a superlattice having a few- 12 monolayer-thick wells and barriers, 13 in which the barriers are thin 14 enough that carriers tunnel through 15 them”

16 The parties agree that a short period superlattice is made up of wells and barriers. Rather
17 than the precise nature of the layers, the dispute between the parties relates to Defendants' request
18 to adopt narrow limits on the thicknesses of those layers.

19 Rather than the specific dimensions, the focus of the claimed short period superlattice is on
20 the properties of two different types of regions within the barriers:

21 a short period superlattice (SPSL) semiconductor layer, wherein a composition of
22 at least one barrier in the SPSL semiconductor layer varies along lateral
23 dimensions of the at least one barrier such that a lateral cross section of the at
24 least one barrier includes:
25 a set of transparent regions having a first characteristic band gap . . .; and
26 a set of higher conductive regions having a second characteristic band gap[.]

27 In other words, the defining characteristic of the barrier is the balance between its interaction with
28 light (as reflected in the recitation “transparent regions”) and its interaction with charge carriers (as
29 reflected in the recitation “conductive regions”).

30 This focus is confirmed throughout the specification of the '420 patent. For example, the
31 Abstract states:

32 The layer can comprise a short period superlattice, which includes barriers
33 alternating with wells. In this case, the barriers can include both transparent
34 regions, which are configured to reduce an amount of radiation that is absorbed in
35 the layer, and higher conductive regions, which are configured to keep the voltage
36 drop across the layer within a desired range.

37 (Eisenberg Decl. Ex. 7 at Abstract; *see also id.* at 5:62-6:1.) In other words, the material properties
38 within the barrier layer are varied to emphasize two properties, conductivity and transparency:

1 In particular, the inhomogeneities will result in lower bandgap regions, which
 2 become places of charge localization and form a set of higher conductive
regions of carrier conductive channels in the semiconductor layer. These higher
conductive regions have an improved vertical conductivity over that of a
 3 substantially homogenous layer of the material. Additionally, the
 4 inhomogeneities also will result in high band gap regions, which form a set of at
least partially transparent regions within the layer, each of which has an
improved vertical transparency over that of a substantially homogenous layer of
 5 the material.

6 (*Id.* at 8:38-48.) These conflicting properties are depicted, for example in figures 7 and 9 through
 7 11, wherein increasing the area dedicated to conductive regions also increases absorption and
 8 thereby decreases transparency. (*See also id.* at 9:47-52.)

9 Rather than address the nature of the short period superlattice in the context of the '420
 10 patent, Defendants import improper and unsupported requirements into the claims.

11 First, Defendants assert that the wells and barriers must be “a few-monolayer[s]-thick.”
 12 The term monolayer is used in neither the '420 patent nor its file history, and therefore, is not a
 13 proper basis to limit the claims. *Thorner*, 669 F.3d at 1365. In addition, the proposal will no doubt
 14 lead to additional disputes regarding the scope of the term “few-monolayers.” Indeed, that
 15 construction appears to give little additional guidance to the fact finder regarding what falls with
 16 or is excluded from the claims. The construction, therefore, does not meet claim construction’s
 17 primary purpose. *See Eon Corp. IP Holdings*, 815 F.3d at 1320.

18 And second, Defendants assert that the barriers in particular must be “thin enough that
 19 carriers tunnel through them.”² Rather than being specifically limited to tunneling, the '420 patent
 20 envisions various forms of carrier movement through the barrier:

21 The carrier path through the layer 22 (FIGS. 3A and 3B) is composed of [1] a
 22 diffusive lateral component due to the high mobility of carriers in the lateral
 direction, [2] barrier tunneling, and/or [3] penetration through conducting

23 ² Tunneling is a well-known quantum-physics concept, where a particle with insufficient
 24 energy to exceed a potential barrier is able nonetheless to pass through. In classical mechanics, that
 passage would be impossible, but in quantum physics a particle is modeled as a wave function with
 a probability of appearing on the barrier’s far side.

1 channels in a direction normal to the semiconductor layer 22.

2 (Eisenberg Decl. Ex. 7 at 12:9-13.) In other words, rather than passing through the barrier, the
 3 expressly claimed “higher conductive regions” can provide ordinary conduction through the
 4 barrier. Here again, therefore, Defendants’ construction seeks to import unnecessary limitations
 5 that are neither required nor even supported by the intrinsic record.

6 **10. “transparent regions” (’420 patent claims 1 and 13)**

7 Claim Term	8 Plaintiff’s Proposal	9 Defendants’ Proposal
10 “transparent 11 regions”	12 Plain and ordinary meaning, or 13 in the alternative “regions of the 14 barrier that permit light at or 15 near a target wavelength to pass 16 through” ³	17 Indefinite 18 In the alternative: 19 “distinct regions that have a transmission 20 coefficient of at least 50% for a target 21 wavelength”

22 The parties appear to agree that the term “regions” requires no construction. In particular,
 23 Defendants merely reuse that term in their alternative construction, suggesting that the jury can
 24 apply that term directly. Instead, the focus of the parties’ disagreement is the word “transparent.”
 25 SETi asserts that that no construction is necessary. In contrast, Defendants appears to assert that
 26 unless a specific numerical range is applied, this term is indefinite.

27 The word “transparent” is a common and well-understood term that requires no express
 28 construction. Simply put, light of the wavelength of interested is able to pass through the recited
 29 regions. No more is implied or required by the relevant recitation. Support for this broad scope is
 30 provided throughout the specification of the ’420 patent. For example, in the Summary of the
 31 Invention section, the inventors provided the following description:

32 Aspects of the invention provide a device including one or more layers with
 33 lateral regions configured to facilitate the transmission of radiation through the
 34 layer and lateral regions configured to facilitate current flow through the layer.

35 ³ To narrow the scope of the dispute, SETi’s alternative construction adopts the “target
 36 wavelength” portion of Defendants’ alternative proposal.

1 The layer can comprise a short period superlattice, which includes barriers
 2 alternating with wells. In this case, the barriers can include both transparent
 3 regions, which are configured to reduce an amount of radiation that is absorbed in
the layer, and higher conductive regions, which are configured to keep the
 4 Voltage drop across the layer within a desired range.

5 (Eisenberg Decl. Ex. 7 at 3:46-55.) The Detailed Description section provides a similar disclosure.
 6 (*Id.* at 5:58-6:1; *see also id.* at 7:4-8 (broadly using the terms “semi-transparent” and “transparent”
 7 as examples of the term “partially transparent”).)

8 Rather than seek to identify the plain and ordinary meaning of the term “transparent,”
 9 Defendants seek to import technical jargon and improperly impose a strict numerical limit. Both
 10 flaws require rejection of Defendants’ proposal.

11 As to the form of Defendants’ proposal, the proffered language renders the claim scope
 12 more rather than less clear. In particular, rather than jury-usable language, Defendants propose
 13 “hav[ing] a transmission coefficient of at least 50% for a target wavelength.” This proposal fails
 14 claim construction’s fundamental purpose, to “provide the jury with a clear understanding of the
 15 disputed claim scope.” *Eon Corp. IP Holdings*, 815 F.3d at 1320.

16 As to the numerical limit, Defendants’ position appears to be that unless a strict limit is
 17 imported from the specification into the claims, the disputed language is indefinite. Defendants’
 18 argument is contrary to law and inconsistent with the specification of the ’420 patent.

19 The leading case on indefiniteness, *Nautilus*, acknowledged that claims must provide
 20 “clarity,” but that “absolute precision is unattainable.” 134 S.C. at 2129. As the Federal Circuit has
 21 subsequently acknowledged, “[t]he definiteness standard ‘must allow for a modicum of
 22 uncertainty’ to provide incentives for innovation, but must also require ‘clear notice of what is
 23 claimed, thereby appris[ing] the public of what is still open to them.’” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) (citing *Nautilus*, 134 S. Ct. at 2128, 2129). Thus,
 24 a claim construction need not impose “numerical precision.” *Exmark Mfg. Co. Inc. v. Briggs &*

1 *Stratton Power Prod. Grp., LLC*, 879 F.3d 1332, 1346 (Fed. Cir. 2018); *see also One-E-Way, Inc.*
 2 *v. Int'l Trade Comm'n*, 859 F.3d 1059, 1063 (Fed. Cir. 2017). Instead, the issue is whether the
 3 scope is ascertainable to a person of ordinary skill in the art. *One-E-Way*, 859 F.3d at 1063.

4 Defendants cannot argue that the '420 patent lacks guidance regarding the term
 5 transparent. To the contrary Defendants take an unambiguously exemplary disclosure from the
 6 specification and import that disclosure into the claims. (Eisenberg Decl. Ex. 7 at 9:61-65 (“In a
 7 more particular embodiment, the transparent regions comprise a transmission coefficient for
 8 radiation of a target wavelength higher than approximately fifty percent (sixty percent in another
 9 embodiment and eighty percent in a still more particular embodiment).”). That form of claim
 10 construction is improper absent an express definition or disclaimer. *Thorner*, 669 F.3d at 1365.

11 Moreover, the specification expressly contemplates transmission coefficients significantly
 12 below fifty percent. (See Eisenberg Decl. Ex. 7 at 7:21-40 (describing a transmission coefficient as
 13 0.5%).) As discussed above, the breadth of the disclosure is confirmed by specification’s
 14 description of the terms “transparent” and “semi-transparent” as examples of the term “partially
 15 transparent.” (*Id.* at 7:6-7.) Instead of a specific quantification of transparency, the specification
 16 focusses throughout on balancing the competing needs for conductivity and transparency. (See
 17 Eisenberg Decl. Ex. 7 at 3:46-55; 5:58-6:1.) The claims, therefore, adequately reflect that
 18 inventive concept by expressly reciting those characteristics of the different regions of the barrier.

19 Defendants’ imposition of a 50% limit also runs afoul of the claim-differentiation doctrine.
 20 That doctrine, presumes that dependent claims are “of narrower scope than the independent claims
 21 from which they depend.” *AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1242 (Fed. Cir.
 22 2003). Here, however, claim 7 expressly recites the limit that Defendants’ seek to import into
 23 independent claim 1: “[t]he device of claim 1, wherein the set of transparent regions have an
 24 average transmission coefficient for radiation of a target wavelength of at least fifty percent.”

III. CONCLUSION

For the foregoing reasons, SETi requests the court adopt its proposed constructions and reject Defendants' constructions.

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